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ABSTRACT

A review of the major literature examining human work behavior from the perspective of developmental psychology indicates that, although many issues pertaining to the meaning of the concepts of change and development are still unresolved, a great potential exists for cross-fertilization between developmental and vocational psychology. Vocational development has not been a subject in the mainstream of developmental psychology; however, several noted psychologists, including Piaget, Havighurst, Waterman, and Erikson, have dealt with the antecedents of various vocational identity outcomes and thus have had something to say about vocational development. Developmental psychology can make several unique contributions to the understanding of work-related behavior in general and of the psychology of career development in particular. In the past 20 years, several methodological advances have been made that have direct implications for research efforts in vocational development. These advances, which may be grouped into the categories of longitudinal design, measurement of change, and longitudinal data analysis, can serve as tools to advance vocational and counseling psychologists' understanding of work behavior and vocational or career development and can thus help them counsel their adult clients more effectively. (MN)

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Human Work Behavior from the Perspective of Developmental Psychology

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To start with, I would like to make a confession: I am, by training, neither a developmental psychologist nor a counseling psychologist. By virtue of my training as a clinical psychologist I am probably closer, in some ways, to the counseling psychology perspective than to the developmental psychology perspective. As a matter of fact, during my graduate student years I worked as a freshman advisor in the Counseling Center of a large University, acquiring a first-hand appreciation of the complexity of vocational behavior on the one hand and the difficulty of intervening in it on the other. Since then, however, I have spent most of my career in the College of Human Development at Penn State, becoming a "human developmentalist' and learning to appreciate the power of a developmental perspective on human behavior, including work-related behavior. In the remainder of my paper I would like to address three broad questions that I hope will begin to illuminate what I see

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as the great potential for cross-fertilization between developmental and vocational psychology.

1. What is the developmental perspective in vocational psychology?

In his review of theories of career development Osipow (1983) identifies three major developmental theories: Super's (1953, 1957) developmental self-concept theory of vocational behavior, Ginzberg, Ginsburg, Axelrad and Herma's (1951) general theory of occupational choice, and Tiedeman's career development theory (Dudley & Tiedeman, 1977; Tiedeman & O'Hara, 1963). All of these theories have made significant contributions to our understanding of "work behavior" and career development. Super's theory, in particular, has led to a significant and continuing stream of research and related theoretical formulations. What may be most significant for our discussion, however, is the fact that the original formulations of these theories are 20 and even 30 years old. There have been substantial advances in developmental theory during the past quarter century, and none of the above major theories have been revised to adequately reflect this. Some of these advances will be discussed in a later section.

At this point it should suffice to note that I have been critical of the use of the concept of development in the vocational psychology literature on the basis of a number of observations (e.g., Vondracek, Lerner, & Schulenberg, 1983): First, the proper use of developmental concepts in vocational theory requires attention to the criteria established for such use; second, universalistic developmental stages such as those proposed as part of every major developmental theory in vocational psychology have been called into question, at least in part because they cannot be understood without reference to the historically changing social and cultural context with which people reciprocally interact; third, even though developmental theories have been

popular in vocational psychology, longitudinal studies that would be capable of testing the major premises of these theories have been few and far between; fourth and finally, empirical findings from developmental psychology are frequently disregarded by vocational psychologists in their developmental formulations.

To further complicate matters, I would note that even developmental psychologists do not agree on the meaning of the term "development" which has been the subject of lively debate not only by psychologists but also by sociologists and other social and biological scientists (Collins, 1982; Harris, 1957; Lerner, 1976; Overton & Reese, 1973; Reese & Overton, 1970). Simply stated, development is not an empirical term. Whether development has taken place or whether some other change has occurred is not just a matter that can be resolved by simply inspecting the data. One thing that most scientists agree on is this: Whenever development occurs there is change, but not all change is developmental. At minimum, developmental change must possess an organized, systematic character, and it must be successive in the sense that changes seen at time two in an observational sequence must be influenced, at least in part, by changes that occurred at time one.

With these major issues still unresolved in developmental psychology, it is not surprising that vocational psychologists have had mixed results in their attempts to apply developmental concepts. The popularity of developmental concepts in vocational psychology is probably due in part to their heuristic value. If they are to have a central position in the vocational theory of the future, they must be understood and applied with the fullest possible appreciation of what they can and cannot do in furthering our understanding of vocational behavior.

For a thorough review and incisive analysis of theory and research relating to a developmental perspective on vocational behavior I would like to refer you to the recent chapter by Jepsen (1984) in the Handbook of Counseling Psychology edited by Brown and Lent (1984). Jepsen identifies ten major developmental themes in the vocational literature including (1) Vocational Choice Expression; (2) Vocational Choice Realism; (3) Vocational Choice Rationale; (4) Vocational Choice Attitudes; (5) Vocational Decision-Making Processes; (6) Work Values; (7) Job Satisfaction; (8) Occupational Knowledge; (9) Vocational Exploratory Behavior; and (10) Job Adjustment. Interestingly, Jepsen reports that developmental behavioral changes were confirmed by recent research for only four of the themes and that conceptual and instrumentation problems as well as a paucity of longitudinal research preclude the confirmation of the developmental character of the others at this time.

2. What does developmental psychology say about vocational development?

To say that vocational development has not been a subject matter in the main stream of developmental psychology would be to make a monumental understatement. Major developmental research journals rarely publish research on vocational development or on work behavior in general. This is particularly puzzling in view of the fact that a number of developmental theorists have written extensively about the significance of vocational development. For example, Piaget (1967, pp. 68-69) states that "True adaptation to society comes automatically when the adolescent reformer attempts to put his ideas to work. Just as experience reconciles formal thought with the realities of things, so does effective and enduring work, undertaken in concrete and well-defined situations, cure dreams." As would be expected, Piaget links vocational development to cognitive development. Implicit in his view is the notion, however, that successful vocational

development is a prerequisite for successful overall development beyond adolescence.

Havighurst, a sociologist with an important developmental perspective, is perhaps best known for his concept of "developmental tasks," many of which relate to career development (1953, 1964). In a more recent statement, Havighurst (1982, p. 780) commented on his current views about the importance of work behavior: "The job...orients and controls the behavior of those persons who participate in it. It sets a goal for the worker, determines the manner in which the goal may be attained and the reward offered for its achievement, and affects the whole range of his/her participation in the society of which s/he is a member. Its influences extend even beyond the actual work life of the individual. We also find that the part of his/her adult life not spent in work is, nonetheless, affected....In short the job in our society exerts an influence which pervades the whole of the adult life span." Clearly, Havighurst sees work behavior as one of the central features of man's existence in Western society. The person and work can be conceptualized as reciprocally interacting with one another: the person chosing a job and developing a career concomitantly with developing other aspects of the self in relation to other aspects of the environment.

A similar position has been advocated by Erikson (1959, 1968). He views the individual as developing through eight stages, interacting with an ever widening social radius. The eight stages, from infancy through senescence, represent both developmental tasks and potential crises. Most acutely implicated in the development of vocational behavior are the school age and adolescence stages. In the school age stage the major task is to develop a sense of industry and the capacity to enjoy work. Failure to do so can lead

to a sense of inferiority. During the period of adolescence the major task is to establish an identity.

Erikson originally introduced the construct of identity in the context of psychoanalytic clinical analysis, and thus did not perceive any compelling need to operationalize it. As Waterman (1982) has observed, this has proven to be a problem for researchers wishing to investigate the development of the various components of Erikson's identity construct. Partly to resolve this problem and partly to extend and refine Erikson's original formulations, Marcia (1966, 1980) introduced his concept of identity "statuses." Identity statuses are operationally defined via a structured interview procedure. They represent four distinctive modes of dealing with the issue of identity formulation in adolescence.

"Those classified by these modes are defined in terms of the presence or absence of a decision-making period (crisis) and the extent of personal investment (commitment) in two areas: occupations and ideology. Identity Achievements are individuals who have experienced a decision-making period and are pursuing a self-chosen occupation and ideological goals. Foreclosures are persons who are also committed to occupational and ideological positions, but these have been parentally chosen rather than self-chosen. They show little or no evidence of "crisis." Identity Diffusions are young people who have no set occupational or ideological direction, regardless of whether or not they may have experienced a decision-making period. Moratoriums are individuals who are currently struggling with occupational and/or ideological issues; they are in an identity crisis" (Marcia, 1980, p. 161).

Building on Marcia's work, Waterman (1982, p. 345) has proposed a number of hypotheses regarding the Eriksonian concept of identity development. Waterman's hypotheses are restated below to deal with only the vocational

aspect of identity and not the ideological one. Both Waterman and Erikson might well object to considering one aspect apart from the other, but it may be justified in the present situation because it allows me to very nicely illustrate the kinds of hypotheses that might very well be derived from not only Erikson's but other developmental theories as well.

1. Strong identification with parents before or during adolescence increases the likelihood of making a commitment to the parent(s) occupation or line of work. Foreclosure is the most likely vocational identity outcome.

2. Permissive, neglecting, or rejecting parenting styles will most likely produce conflict and difficulty in adolescents trying to make vocational choices. The result will be vocational identity diffusion, i.e., vacillation or an inability to make any commitment to a vocational choice. Democratic parenting may be the most likely parental strategy to produce consideration of a number of vocational alternatives, followed by a sound commitment to one, and thus vocational identity achievement.

3. The chance of undergoing a vocational identity crisis increases with the number of vocational identity alternatives the individual encounters.

4. The availability of occupationally successful models facilitates the process of making a vocational commitment.

5. Social expectations regarding vocational choices, which arise within the contexts of the family, the school, or the peer group will have an effect upon the pathway employed to achieve a vocational identity.

6. Vocational identity will be established more successfully in those individuals in whom preadolescent personality provides a suitable foundation, such as sufficient levels of autonomy, initiative, and industry.

Particularly noteworthy about these hypotheses based on Erikson's developmental theory is the fact that they deal with the antecedents of

various vocational identity outcomes. Understanding the developmental antecedents of various vocational behavior variables would certainly lead to better prediction and more effective intervention. At this point the above examples should suffice to demonstrate that developmental theory does, indeed, have something to say about vocational development. At the same time it is apparent that developmental psychologists have not exploited the rich potential of developmental theory for explaining the variety of vocational behavior.

3. What unique contributions can developmental psychology make to our understanding of work-related behavior?

Super (1983, p. 26), in lamenting the apparent lack of attention given to the psychology of career development by noted life-span developmental psychologists, asks: "Is the theorizing and researching in the psychology of career development so bad that it is unworthy of notice by psychologists in other specialities?" The answer to this question, in my view, is that both vocational psychologists and developmental psychologists must bear some of the blame for the current state of affairs. Nevertheless, interest in career development is increasing among developmental psychologists (for examples, see Vondracek & Lerner, 1982, and some of the very interesting work by Grotevant, 1979; Grotevant & Durrett, 1980, and Grotevant & Thorbeke, 1982). It can only be hoped that mutually beneficial communication between the two areas will increase and thereby advance the cause of both areas.

It is my considered judgment that developmental psychology can most immediately advance our understanding of the whole area of work behavior and career development by applying to this area the methodological advances it has been noted for in recent years. Before identifying some of these advances and discussing how they may be applied to our area of concern, it may be useful to

note that the general purpose of life-span developmental research is to explain, and modify intra-individual change and inter-individual differences and similarities in intra-individual change (e.g., Baltes & Nesselroade, 1979; Baltes, Reese, & Nesselroade, 1977). That is, it is not enough to learn how and why individuals change over time, but rather it is also necessary to determine how and why individuals are similar or different in changes over time. A defining characteristic of the life-span development movement is that it considers change to be multidirectional and multidimensional (e.g., Baltes & Nesselroade, 1979). Admittedly, methodological issues of design, measurement, and analysis involved in the study of change are among the most complex in the behavioral sciences (e.g., Baltes, 1968; Campbell & Stanley, 1963; Nesselroade, 1970, 1983; Schaie, 1965; Wohlwill, 1970). Nevertheless, in the past 20 years several methodological advances have been made, and these have direct implications for research efforts in vocational development. In broad terms, these advances can be grouped into three related categories: (1) longitudinal designs; (2) measurement of change; and (3) longitudinal data analysis.

Longitudinal Designs

Longitudinal designs are essential to developmental research. Although cross-sectional designs clearly have a place in the study of inter-individual differences at one point in time, and can provide a limited basis for inferences about change, the use of inter-individual age-graded differences found in cross-sectional studies to depict intra-individual change is a dangerous pitfall to which more than one vocational development researcher has fallen prey. In short, if the goal is to describe or explain intra-individual change, the same individuals must be observed on two or more occasions.

Longitudinal designs are not, of course, without problems, most of which center around issues of internal and external validity (e.g., testing effects, instrumentation, regression towards the mean, selection, experimental mortality, interaction effects of testing) (Campbell & Stanley, 1963; see also Baltes, Reese, & Nesselroade, 1977). Of particular interest here are the problems associated with cohort effects. Specifically, when only one birth cohort is involved in a longitudinal study ontogenetic effects are hopelessly confounded with historical effects on development (e.g., Baltes, Cornelius, & Nesselroade, 1979). For example, because of technological advances and socio-cultural changes, the timing, sequence of "stages," and outcomes of vocational developmental processes may be different for those born in the 1940's than for those born in the 1960's. In short, in longitudinal designs, unless more than one birth cohort is followed over time, the unique interaction of individual lives and historical time cannot be uncovered.

The advent of sequential designs (e.g., Schaie, 1965; Baltes, 1968) has made it possible to identify cohort effects. Essentially, sequential designs involve the observation of at least two birth cohorts over time in either a succession of longitudinal studies (longitudinal sequences) or of cross-sectional studies (cross-sectional sequences) (e.g., Baltes et al., 1979). In the former case, the same individuals are measured repeatedly at different ages (thus involving the problems associated with repeated measurement), and in the later case, independent observations with respect to age and cohort are gathered (thus circumventing problems associated with repeated measurement, but creating problems associated with the inference of intra-individual change). These two forms of sequential strategies can be exploited in various ways, combined or repeatedly, to describe and explain cohort effects on development (it should be noted, however, that disagreement

exists over methods of estimation and the utility of such designs in explaining cohort effects [see Schaie, 1965; Baltes, 1968; Schaie & Baltes, 1975]).

To illustrate this approach, lets consider the following example, which could be a study of vocational interest development. The design could involve varying age, sex, and cohort membership in a coordinated series of short term longitudinal sequences, each requiring three times of measurement. Several birth cohorts (lets assume four) could take a vocational test battery in three successive years, thus enabling the study to cover a six year age span in subjects: Birth cohort 1972 would be 13 years old at the first time of measurement (1985), 14 years old at the second time of measurement (1986), and 15 years old at the third occasion of measurement (1987). Birth cohort 1969, on the other hand, would be 16 years old at the first time of measurement (1985), 17 years old at the second time of measurement (1986), and 18 years at the third time of measurement (1987). Comparable longitudinal sequences would take place for the intermediate birth cohorts 1970 and 1971.

The two major limitations to be guarded against in this type of design are: (1) selective drop-out or attrition of the longitudinal sample; and (2) retest effects which can result in the longitudinal subjects showing apparent increases or decreases in level over time which are unrelated to normative ontogenetic change. Unless steps are taken to either randomize, or estimate and correct for such effects, the conclusions and generalizations one makes are problematic. With regard to retest effects a number of control groups are necessary. Thus, in addition to the core longitudinal sample an additional sample of males and females, drawn randomly from each cohort, should be tested for the first time at the second occasion of measurement; still another independent sample should be tested for the first time at the third occasion

of measurement. Thus, at each occasion of measurement for which the longitudinal core sample will be repeating measures, there will be an independent sample which will be equivalent to the longitudinal sample except for one characteristic--they will not have had prior exposure to the measurement battery. Comparisons of the resulting several data sets will then permit analysis of the effects of repeated testing as well as the introduction of appropriate corrections (Labouvie, Bartsch, Nesselroade, & Baltes, 1974).

Measurement of Change

There are a host of issues and problems associated with designing and implementing instruments for the measurement of change. Essentially, these issues and problems refer to the isolation of the construct to be measured and then measuring it in such a manner that observed changes reflect changes in and only in the given construct. While any number of topics could be discussed here, ranging from the various problems of internal validity and reliability to the dangers of using change scores (e.g., Cronbach & Furby, 1970), attention is focused on the problems associated with measurement equivalence and construct lability. (It should be noted that advances relevant to these two pitfalls to reliable measurement generally have been more towards the identification of the "symptoms" rather than the "cures.")

For purposes here, measurement equivalence refers to the problem of determining whether observed change on a given instrument is due to change in the individual, change in what the instrument is actually measuring, or some of both (e.g., Baltes, Reese, & Nesselroade, 1977; Labouvie, 1980). For example, suppose that in a group of students measured with the same instrument prior to and after their college careers the importance assigned to the work value of economic returns increases over time. Unless measurement equivalence is established, it is not possible to conclude that these students have become

more economically oriented, for it may be the case that the instrument measures qualitatively different aspects of economic returns at the two times of measurement. Several methods exist for establishing or assessing measurement equivalence (e.g., Cattell, 1970; Labouvie, Frohring, Baltes, & Goulet, 1973; see Ekensberger, 1973, for a review), none of which are best or appropriate in all cases. The point is that measurement equivalence which can be examined at the level of observed variables and latent variables is a matter that vocational development researchers must recognize and grapple with.

Lability or stability of the given construct is also a matter that researchers need to recognize when attempting to measure change. An overarching assumption in the vocational literature has been that vocationally relevant outcomes reflect stable constructs akin to personality traits. For example, differential researchers have taken individual differences found at one point in time to represent stable individual differences over time. In addition, in long-term longitudinal studies, mean changes in the given construct have been viewed as indicating long-term change or maturation. It is entirely possible that the constructs under consideration encompass some component of lability (steady-state variability), akin to state dimensions (e.g., mood). If, for example, vocational interests demonstrate day-to-day variability (not representing measurement error), then a one time measurement could misrepresent inter-individual differences, and long term longitudinal measurement could distort intra-individual change. The point here is that just because vocational constructs are labeled as stable, they are not necessarily stable. This is especially important when determining the reliability of an instrument. For example, test-retest correlations over periods of even a few days are only good indicators of reliability when the

construct is known to be exceedingly stable (e.g., Nesselroade, 1983). If the construct is given to some lability, then the reliability estimates based on test-retest data will be attenuated. One can only wonder about the number of good, reliable measures of vocational phenomena that have been discarded because of low test-retest correlations.

Longitudinal Data Analysis

Advancement in the analysis of longitudinal data has been a subject that has been affected to a great extent by the advancement of computer packages and programming sophistication. Indeed, where we once struggled for hours with computing regression coefficients and inverting correlation matrices, we can now witness the completion of complex statistical operations in a matter of seconds. I rest my case for cohort effects!

Several advances have been made in such techniques as repeated measures ANOVA, multivariate analysis of variance, time series analysis, confirmatory factor analysis, and causal modeling. It is not my intention to describe or even identify the various advances that have been made in these areas. Nevertheless, I would like to mention two types of analytic procedures which appear to hold much promise for the analysis of longitudinal vocational data. The first comes under the generic label of causal modeling with latent variables. In essence, causal models permit the testing of hypotheses and the construction of causal claims without experimental manipulation. There are two parts to a causal model--the measurement model (i.e., constructing latent variables from observed variables via confirmatory factor analysis), and the structural equation model (i.e., setting up and solving systems of structural regression equations). (It should be noted that path analysis is a special case of structural equation models, and does not include a measurement model [e.g., Rogosa, 1979]). The successful construction of causal models depends

on explicit specifications of causal links which ideally are theoretically based. Although causal models have had only limited utility in the study of career development (e.g., Mortimer & Kumka, 1983; Kohn & Schooler, 1983), the possibilities for future research efforts are endless.

The second analytic procedure that I wanted to mention is P-technique factor analysis (Cattell, 1963). Previously I mentioned that vocational phenomena may not be as stable as they are assumed to be. P-technique factor analysis allows for the discovery of dimensions of lability, or state dimensions. Contrasted to the well known R-technique or cross-sectional factor analysis, in which several individuals are measured on several variables at one point in time, P-technique involves the repeated measurement of one individual on several variables over several occasions (preferably at least 100 occasions). Whereas R-technique factors describe inter-individual differences at one point in time, P-technique factors describe intra-individual short term change patterns (essentially P-technique is useful to determine which variables "go together" or covary over time). By conducting simultaneous P-technique studies, it is possible to identify inter-individual differences or similarities in intra-individual change patterns.

For example, Schulenberg (1984) recently investigated intra-individual change patterns in work values via P-technique factor analysis. He concluded that work values may, in fact, not be as stable as had previously been assumed, and that in addition to trait-like dimensions there may be state dimensions of work values. Moreover, by conducting simultaneous P-technique factor analyses on seven subjects he was able to show that there are very likely some similarities in work value intra-individual change patterns (states) across subjects. Other vocationally relevant variables that have

been considered to be quite stable, such as vocational interests (Costa, McCrae, & Holland, 1984), may be profitably examined using P-technique factor analysis.

Conclusion

By necessity, a brief presentation such as this is likely to do injustice to the topics it covers. Clearly, vocational psychologists, other than those mentioned, have concerned themselves with developmental perspectives on vocational behavior and developmental psychologists have, in fact, occasionally concerned themselves with career development. With appropriate apologies to all I would like, nevertheless, to emphasize a point that has been implicit in my presentation: work behavior, vocational, or career development, all represent central features of life in Western society. To study human development without attending to these important variables makes very little sense. Conversely, vocational and counseling psychologists must recognize that people, as well as their circumstances, change constantly, and that thus their understanding of the important phenomena of work and career can be greatly enhanced by an increased appreciation of the theories and methods of scientists interested primarily in the study of change, namely, developmental psychologists.

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